The Epidemic of Despair Among White Americans: Trends in the Leading Causes of Premature Death, 1999–2015

Elizabeth M. Stein, MD, MS, Keith P. Gennuso, PhD, Donna C. Ugboaja, BS, and Patrick L. Remington, MD, MPH

Objectives. To evaluate trends in premature death rates by cause of death, age, race, and urbanization level in the United States.

Methods. We calculated cause-specific death rates using the Compressed Mortality File, National Center for Health Statistics data for adults aged 25 to 64 years in 2 time periods: 1999 to 2001 and 2013 to 2015. We defined 48 subpopulations by 10-year age groups, race/ethnicity, and county urbanization level (large urban, suburban, small or medium metropolitan, and rural).

Results. The age-adjusted premature death rates for all adults declined by 8% between 1999 to 2001 and 2013 to 2015, with decreases in 39 of the 48 subpopulations. Most decreases in death rates were attributable to HIV, cardiovascular disease, and cancer. All 9 subpopulations with increased death rates were non-Hispanic Whites, largely outside large urban areas. Most increases in death rates were attributable to suicide, poisoning, and liver disease.

Conclusions. The unfavorable recent trends in premature death rate among non-Hispanic Whites outside large urban areas were primarily caused by self-destructive health behaviors likely related to underlying social and economic factors in these communities. (*Am J Public Health.* 2017;107:1541–1547. doi:10.2105/AJPH.2017.303941)

See also Erwin, p. 1533, and also Diez-Roux, p. 1566.

Recently, Case and Deaton[1] observed that middle-aged White non-Hispanic Americans have shorter lifespans, a reversal of decades of progress that has not been observed in any other industrialized nation. This trend is becoming more pronounced in working-aged adults, with newly released 2015 data showing that the overall death rate increased for the first time in a decade, particularly among those aged younger than 65 years.[2] A 2017 Centers for Disease Control and Prevention (CDC) publication[3] highlighted increased mortality rates among rural communities in the United States compared with urban locales. Missing from these noteworthy observations were the roles of place and race together—specifically, differences between urban and rural communities and among different racial groups, which might be driven by underlying social and economic factors.

Recently, the County Health Rankings[4] 2016 Key Findings Report[5] showed that rural residents have a higher risk for premature mortality relative to urban and suburban residents. Similarly, Chetty et al.[6] investigated the gap in mortality between high- and low-income Americans and found that geography was highly correlated with health in low-income Americans, with the mortality gaps between rich and poor narrowing in some regions while widening in others. However, there is a lack of a deeper examination of the causes of premature death among rural populations in the United States, as well as an investigation into which demographic populations in each area are at risk for adverse trends in health over time. In this study, we examined death rates in 4 different levels of urbanization in working-age, non-Hispanic White, non-Hispanic Black, and Hispanic adults. To describe how the deaths of each subpopulation changed over a recent 16-year period, we compared trends in death rates from 1999 to 2001 to those from 2012 to 2015 for each level of urbanization (large urban, suburban, small or medium metropolitan, and rural). Lastly, we identified the leading causes of death that resulted in these changes in death rates over time.

METHODS

Data for the present study came from the National Center for Health Statistics' (NCHS) Compressed Mortality File within the Underlying Cause of Death database, through CDC Wide-Ranging Online Data for Epidemiologic Research (WONDER). These data consist of information from death certificates for US residents within counties, which records demographic characteristics and an *International Classification of Diseases, 10th edition* (*ICD-10*)[7]–coded underlying cause of death. For a more detailed description of methodology of CDC WONDER, visit their Web site at: http://wonder.cdc.gov/wonder/help/ucd.html#.

ABOUT THE AUTHORS

Elizabeth M. Stein is with the Preventive Medicine Residency Program, University of Wisconsin School of Medicine and Public Health, Madison. Keith P. Gennuso is with the Population Health Institute, County Health Rankings, University of Wisconsin Madison School of Medicine and Public Health. Donna C. Ugboaja is with the University of Wisconsin Madison School of Medicine and Public Health. Patrick L. Remington is with the Department of Population Health Sciences, University of Wisconsin School of Medicine and Public Health.

Correspondence should be sent to Elizabeth M. Stein, MD, MS, 1108 Coddington Rd, Ithaca, NY 14850 (e-mail: elizabethstein@gmail.com). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

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TABLE 1—Level of Urbanization Definitions and Demographic Characteristics: Trends in the Leading Causes of Premature Death, United States, 1999–2015

	Large Urban	Suburban	Small/Medium Metropolitan	Rural
Definition	Large central metropolitan counties within an MSA with >1 million people	Large fringe metropolitan counties within an MSA with >1 million people	Metropolitan counties within an MSA with 50 000 to 1 million people	Nonmetropolitan counties with <50 000 people
No. (%) of counties	63 (2.0)	354 (11.3)	672 (21)	2 053 (65)
No. (%) of population	95.6 million (29.8)	79.4 million (24.7)	95.2 million (29.6)	51.1 million (15.9)
Population range	153 511–10.2 million	8 499–2.1 million	1 554–1.0 million	89–215 622
No. (%) of White population	41.4 million (20.9)	52.2 million (26.3)	64.4 million (32.5)	40.0 million (20.2)
No. (%) of Black population	16.2 million (40.6)	9.4 million (23.6)	10.0 million (25.1)	4.3 million (10.8)
No. (%) of Hispanic population	26.5 million (46.8)	11.1 million (19.6)	14.7 million (26.0)	4.3 million (7.6)

Note. MSA = Metropolitan Statistical Area.
Source. 2015 US Census Estimates.

Subpopulations Defined

Levels of urbanization (large urban, suburban, small or medium metropolitan, and rural) are an adaptation of the 2006 NCHS Urban-Rural Classification Scheme for counties (https://www.cdc.gov/nchs/data/oae/nchsurbruralfiledocumentation.pdf). Table 1 shows the definitions for each level of urbanization and describes the demographic characteristics for each county using data from 2015 US Census estimates.

We studied three racial/ethnic categories: non-Hispanic White (referred to herein as White), non-Hispanic Black (referred to as Black), and Hispanic. In addition, we calculated death rates for all races/ethnicities, a group that includes combined deaths of White, Black, and Hispanic populations, in addition to other race groups (Asians, Pacific Islanders, and Native Americans) not included in the White, Black, or Hispanic subpopulations. These groups were excluded from subpopulation analysis because of their small sample sizes. To describe disparities in death rates between racial/ethnic groups at both time intervals, we calculated the relative risk (RR) of death for Blacks and for Hispanics, using Whites as the reference group. Death rates for Hispanics should be interpreted with caution because of the relatively smaller absolute number of deaths (see the "Limitations" section).

Because the study sample included persons aged 25 to 64 years, which is an age range below the average life expectancy in the United States, we considered all deaths in our study sample to be premature deaths. Four age categories were explored: 25 to 34, 35 to 44, 45 to 54, and 55 to 64 years. Age groups were determined in a manner that allowed examination of differences in mortality at different life stages, while allowing for enough deaths per category. Age group–specific rates were not age-adjusted. When examining the entire population of adults aged 25 to 64 years, we used age-adjusted rates, directly adjusted to the 2000 US standard population.

Trends in All-Cause Deaths

We explored trends in deaths from all causes by county level of urbanization, age, and race/ethnicity. We calculated data using 3-year averages of death rates for 2 intervals: 1999 to 2001 and 2013 to 2015. We calculated disparities in rates between racial/ethnic groups or between places during 1999 to 2001 and during 2013 to 2015 using RR (e.g., rate in Blacks divided by the rate in Whites).

We calculated absolute changes in death rates between the 1999 to 2001 and 2013 to 2015 intervals by finding the difference between the 1999 to 2001 and 2013 to 2015 rates. We calculated percent changes in death rates by dividing this difference by the 1999 to 2001 rate, and multiplying by 100. We determined statistical significance of the percent change with a *t*-test for independent samples, using MedCalc version 16.8 for Windows (MedCalc Software, Ostend, Belgium).

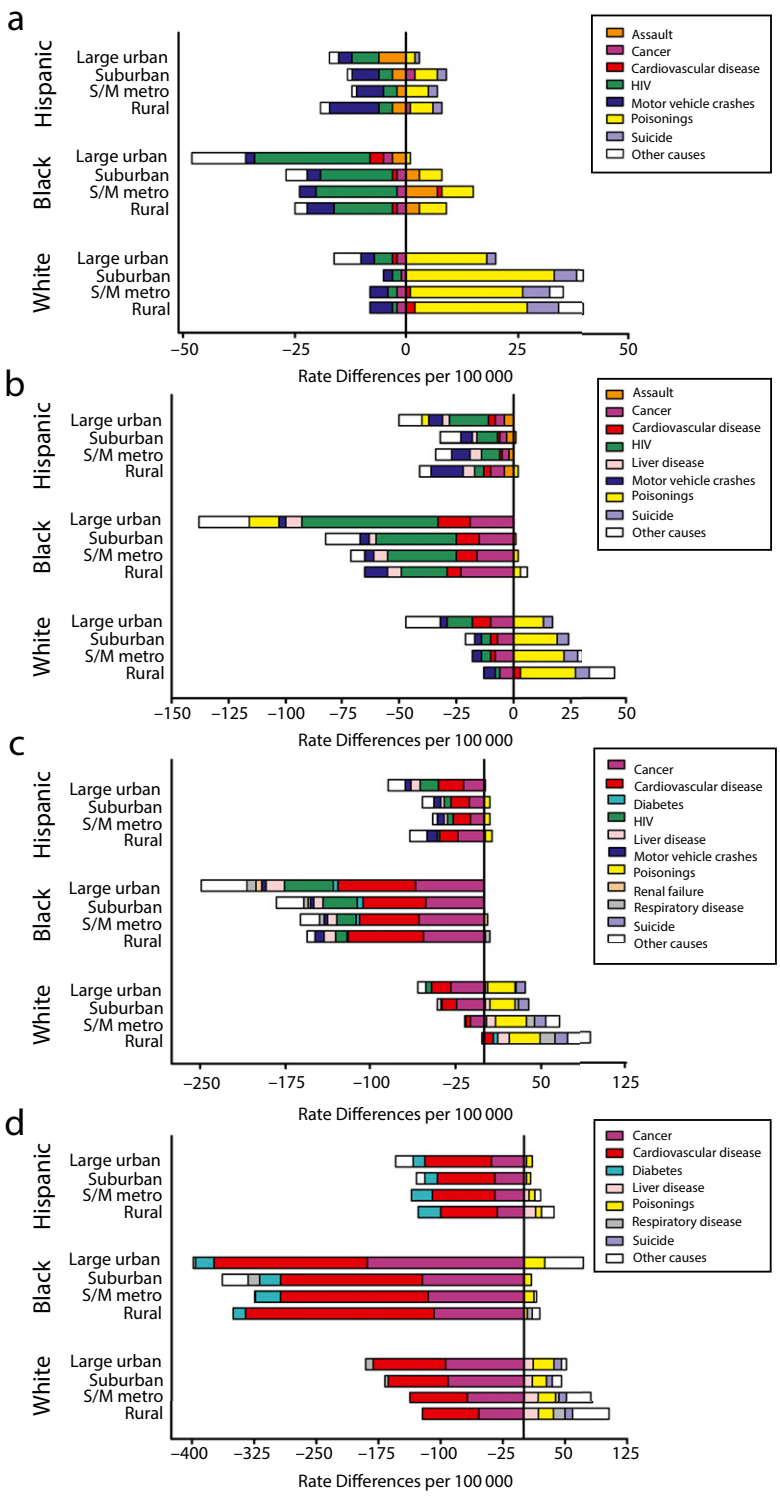
Causes of Death

We explored the underlying causes of death for all 48 subpopulations, which were defined by combinations of age, race/ethnicity, and county urbanization level. We ascertained the leading causes of death during 1999 to 2015 for each age–racial/ethnic group. We then calculated the absolute change for each of the leading causes of death in each age group and sorted these from largest absolute change to smallest absolute change. For each age group, we included up to 10 causes of death that contributed the most to the overall difference in death rates. All other causes (with small differences) were included in the "other" causes of death category. Causes of death categories are based on *ICD-10* codes and described in Appendix A (available as a supplement to the online version of this article at http://www.ajph.org).

Causes of death with the largest absolute change in death rates over time are displayed for all 48 subpopulations in Figure 1. The absolute changes in cause-of-death rates are additive and yield the change in the overall death rate. In Figure 1, the vertical line in the middle of the x-axis represents no change in death rate over time; causes of death with decreasing rates are displayed to the left of this line, and causes of death with increasing rates are displayed to the right.

RESULTS

The age-adjusted premature death rates for all adults decreased by 8% between 1999 to



Note. S/M = small/medium. Hispanic applies to individuals of all races with ethnicity recorded as Hispanic. Black applies to individuals with race recorded as Black and with ethnicity recorded as non-Hispanic. White applies to individuals with race recorded as White and with ethnicity recorded as non-Hispanic. Low numbers of HIV-related deaths in Hispanic rural population aged 25–34 years resulted in unreliable death rates in this group.

FIGURE 1—Leading Causes of Mortality Rate Differences (per 100 000) Between 1999–2001 and 2013–2015 Among Those Aged (a) 25–34 Years, (b) 35–44 Years, (c) 45–54 Years, and (d) 55–64 Years: Trends in the Leading Causes of Premature Death, United States, 1999–2015

2001 and 2013 to 2015, with decreases in 39 of the 48 subpopulations. Most decreases in death rates were attributable to HIV, cardiovascular disease (CVD), and cancer. All 9 subpopulations with increased death rates were among non-Hispanic Whites, largely in rural or small or medium metropolitan counties, mostly caused by deaths from suicide, accidental poisoning, and liver disease.

Table 2 shows all-cause death rates as 3-year averages during 1999 to 2001 and during 2013 to 2015 for each county urbanization level, racial/ethnic group, and age group, as well as the percent change between these 2 time periods. Figure 1 shows the absolute changes in death rates for specific causes of death by county urbanization level, racial/ethnic group, and age group. Although Whites had the most unfavorable trends in premature death rates, Blacks had the highest absolute rates of premature deaths during both 1999 to 2001 and 2013 to 2015. Rural counties, relative to counties with higher population densities, had the highest death rates during both 1999 to 2001 and 2013 to 2015, together with the most unfavorable trends in premature death.

Disparities in Death Rates During 1999 to 2001 and 2013 to 2015

Death rates were generally highest in Blacks in all 4 age groups during both 1999 to 2001 and 2013 to 2015. The disparity in premature death rates for Blacks compared with Whites (as measured by RR) decreased between 1999 to 2001 (RR = 1.9) and 2013 to 2015 (RR = 1.4) and was consistent across the 4 age groups (1999–2001 RR range = 1.7–2.1; 2013–2015 RR range = 1.4–1.5). RRs for premature death indicated a stronger reduction in mortality in Hispanics compared with Whites between 1999 to 2001 (RR = 0.83) and 2013 to 2015 (RR = 0.66) and were consistent across the 4 age groups (1999–2001 RR range = 0.78–0.91; 2013–2015 RR range = 0.61–0.71). Confidence intervals for RR are described in Appendix B (available as a supplement to the online version of this article at http://www.ajph.org).

Death rates among those aged 25 to 64 years were highest in rural counties during both 1999 to 2001 and 2013 to 2015 (1999–2001 = 399 per 100 000; 2013–2015 = 421 per 100 000) and lowest in suburban counties

TABLE 2—All-Cause Death Rate (per 100 000) Trends by Age, Race/Ethnicity, and Urbanization Level: Trends in the Leading Causes of Premature Death, United States, 1999–2015

	All[a]			Non-Hispanic White			Non-Hispanic Black			Hispanic		
Variables	T_1[b]	T_2[c]	Percent Change	T_1[b]	T_2[c]	Percent Change	T_1[b]	T_2[c]	Percent Change	T_1[b]	T_2[c]	Percent Change
Aged 25–34 y												
Urban	105	92	−12	85	90	5	217	170	−22	85	71	−16
Suburban	88	105	20	83	117	42	156	137	−12	72	66	−7
S/M metro	103	119	16	94	122	29	179	169	−5	90	86	−5
Rural	125	148	18	115	147	28	195	179	−8	107	96	−10
All US	103	111	7	93	117	26	193	163	−15	85	76	−11
Aged 35–44 y												
Urban	222	158	−29	192	163	−16	420	282	−33	163	113	−31
Suburban	162	144	−11	155	158	2	280	199	−29	122	91	−25
S/M metro	199	193	−3	186	198	7	352	283	−20	164	131	−20
Rural	221	237	7	204	236	16	372	313	−16	175	136	−22
All US	200	176	−12	182	186	2	369	264	−28	157	114	−27
Aged 45–54 y												
Urban	468	381	−19	411	389	−5	872	620	−29	344	261	−24
Suburban	357	327	−8	344	343	0[e]	614	431	−30	258	209	−19
S/M metro	419	438	5	391	442	13	774	614	−21	346	306	−12
Rural	453	522	15	420	515	23	842	693	−18	376	323	−14
All US	424	405	−4	389	417	7	794	579	−27	333	265	−20
Aged 55–64 y												
Urban	1023	837	−18	953	814	−15	1681	1357	−19	742	598	−19
Suburban	881	734	−17	866	744	−14	1379	1025	−26	614	493	−20
S/M metro	990	913	−8	951	896	−6	1676	1365	−19	796	681	−14
Rural	1072	1033	−4	1026	1007	−2	1824	1492	−18	825	734	−11
All US	990	869	−12	947	862	−9	1640	1299	−21	741	609	−18
Aged 25–64 y[d]												
Urban	390	313	−20	328	312	−5	599	521	−13	286	222	−22
Suburban	314	280	−11	294	294	0[e]	432	381	−12	227	183	−19
S/M metro	364	358	−2	343	358	4	638	521	−18	298	257	−14
Rural	399	421	6	389	414	6	621	574	−8	320	275	−14
All US	365	334	−8	341	341	0[e]	647	493	−24	282	226	−20

Note. Metro = metropolitan; S/M = small/medium.

[a]Population includes all races and ethnicities, including other category.

[b]T_1 represents all-cause death rates per 100 000 during 1999–2001, calculated as 3-year averages.

[c]T_2 represents all-cause death rates per 100 000 during 2013–2015, calculated as 3-year averages.

[d]Death rates for adults aged 25–64 years were adjusted for age.

[e]The t-test for differences between T1 and T2 rate were all significant with $P<.05$, with exception of rate differences marked.

(1999–2001 = 314 per 100 000; 2013–2015 = 280 per 100 000). We observed this among all racial/ethnic and age groups. Across racial/ethnic subpopulations aged 25 to 64 years, RRs of premature death for rural counties compared with suburban counties ranged from 1.3 to 1.4 during 1999 to 2001 and from 1.4 to 1.5 during 2013 to 2015. Across each age group, RRs of premature death for rural counties compared with suburban counties ranged from 1.2 to 1.4 during 1999 to 2001 and from 1.4 to 1.6 at 2013 to 2015. Confidence intervals for RR are described in Appendix B.

Overall Death Rates by Age, Race/Ethnicity, and Place

Death rates for Whites increased in subpopulations aged 25 to 54 years from 1999–2001 to 2013–2015 (Table 2). Among Whites, only subpopulations aged 55 to 64 years saw declines in death rates. By contrast, Black and Hispanic subpopulations of all ages had dramatic reductions in death rates.

Death rates in rural subpopulations for all races/ethnicities increased among those aged 25 to 64 years by 6%, whereas large urban, suburban, and small or medium metropolitan subpopulations had decreases in death rates by 2% to 20% (Table 2). These disparities were most pronounced in Whites relative to other racial/ethnic subpopulations and among

those aged 45 to 54 years, whereas death rates decreased by 19% in large urban counties but increased by 15% in rural counties. In those aged 25 to 34 years, although large urban counties saw a 12% decrease in death rates, increases were seen in suburban (20%), small or medium metropolitan (16%), and rural (18%) counties.

Specific Causes of Death by Age, Race/Ethnicity, and Place

Figure 1 lists the causes of death that account for the largest changes in death rates for each age group by race/ethnicity and county urbanization level by displaying differences in absolute rates for each cause of death from 1999–2001 to 2013–2015.

Figure 1a shows trends in death rates by race and place for persons aged 25 to 34 years. HIV and motor vehicle crash (MVC) deaths declined among all racial/ethnic groups, although deaths from poisonings increased in all racial/ethnic groups. The large overall decreases in deaths among Blacks were caused by decreases from HIV and MVCs, which offset any increases in assault and poisoning in these groups. Although assault deaths declined among Blacks in large urban areas, Blacks in all other areas had increased assault deaths. Similar to Black subpopulations, Hispanics had decreases in HIV and MVCs that offset increased deaths from poisonings and suicides. However, decreases in overall deaths among Hispanics were smaller than decreases among Blacks. Small decreases in HIV and MVC deaths among Whites were not enough to offset increases in poisonings and suicides. Although increases in poisoning deaths were seen in all groups, they were more pronounced among Whites. White and Hispanics in all areas had increases in deaths from suicide, but Whites outside of large urban areas had the largest increases.

Figure 1b shows trends in death rates by race and place for persons aged 35 to 44 years. As in the youngest age group, death rates caused by HIV declined in all groups, but contributed most to the decreases among Blacks. Similarly, deaths from MVCs, cancer, and CVD decreased in each group, but the decreases were greatest among Blacks. By contrast, death rates from poisoning and suicide increased only among Whites, and these increases were greatest among Whites in rural counties.

Figure 1c shows trends in death rates by race and place for persons aged 45 to 54 years. Blacks and Hispanics had an overall decrease in death rates in all places, largely because of decreases in deaths from chronic diseases such as cancer and CVD. Whites in large urban, suburban, and small metropolitan counties also had decreases in these chronic disease deaths, but the magnitude of these decreases were smaller, and any progress was blunted by increased deaths from accidental poisonings, suicide, respiratory disease, and liver disease. Whites in rural counties were the only subpopulation in these age groups who had an increase in deaths from chronic diseases, such as CVD and diabetes, in addition to the similar increases in deaths from poisonings, suicide, liver disease, and respiratory diseases also observed in Whites in counties of other urbanization levels.

Figure 1d shows trends in death rates by race and place for persons aged 55 to 64 years. All subpopulations in this older age group, including rural Whites, had decreases in death rates largely driven by decreases in chronic diseases such as cancer and CVD. Blacks had the largest decreases in cancer and CVD deaths, leading to overall decreases in premature mortality despite increased deaths from poisonings. Whites in all places had increased deaths from poisonings, suicide, and liver disease, but decreased deaths from chronic diseases accounted for overall decreases in death rate in this age group.

DISCUSSION

Significant disparities exist in the rates and the trends in premature death in the United States among 48 subpopulations defined by age, race/ethnicity, and urbanization level. The disparities among races—with highest rates among Blacks and lowest among Hispanics—are longstanding.[1,8] We examined trends for subpopulations by race and place during 1999 to 2015 and found that all 9 subpopulations with increased death rates were White, mostly outside of large urban areas. The causes of death that drove these increases in Whites in all areas were mostly suicide, accidental poisoning, and liver disease. Rural Whites had the largest increases in death rates among all middle-aged adults (45–64 years), whereas suburban Whites had the largest increases in death rates among all young adults (25–34 years). In addition to deaths from suicide, accidental poisoning, and liver disease, Whites in rural areas saw increases in chronic disease deaths, which contributed to the overall higher increases in death rates in these subpopulations. For example, Whites aged 45 to 54 years in rural areas had increased deaths from CVD and respiratory disease deaths, which added to the total burden of premature mortality, whereas no other subpopulation had increases in deaths from these causes.

The marked increases in suicide, accidental poisonings, and liver disease death rates, together with unfavorable chronic disease trends, are driving increased premature mortality in Whites. A large portion of these deaths are caused primarily by underlying behavioral risk factors and poor behavioral health. Case and Deaton[1] coined such deaths as "despair deaths" and showed that they are increasing among "working class Whites," defined as Whites with a high school education or less. They discussed the stress and hopelessness faced by this population as they enter the labor market and are met with bleaker prospects and lower-paying job opportunities relative to the previous generation. This has led to compounding family dysfunction, poor social support, and addiction—conditions that are the drivers of despair deaths. In a more recent Brookings paper by Case and Deaton,[9] they expanded their discussion on how individual- and population-level differences accounted for how despair manifests in health, including ending life intentionally or soothing through opiates, food, tobacco, or alcohol use. Our data supported their observations, showing that Whites aged 45 to 54 years in rural communities, in addition to having the highest increases in despair deaths from liver disease, poisonings, and suicide, also experienced increased deaths from CVD and respiratory disease.

In contrast to the increasing death rates observed in White subpopulations, Black and Hispanic subpopulations of all ages and living in all places experienced significant decreases in death rates. Although a dramatic disparity in death rates between Blacks and Whites persists in the United States, this gap is narrowing. Recent observations showed that since 1999, the mortality gap between Black

and White adults with high school degrees or less closed completely because of ground gained by Blacks and lost by Whites.[9] In our observations, the decreases in Black and Hispanic death rates were largely caused by reductions in MVCs and HIV in younger adults (aged 25–34 years), and reductions in chronic diseases in middle-aged adults (aged 45–64 years). In younger adults, these large decreases offset smaller increases in deaths from poisoning and suicide in Hispanics and deaths from poisoning and assault in Blacks. Specifically, younger adult Blacks outside of large urban areas had increases in deaths from assault. Although not a focus of this study, this was an important finding that deserves further exploration, considering national attention on trends in police brutality, community violence, and structural racism that disproportionately affect Blacks.[10,11]

Our findings showed that young adult (aged 25–34 years) Whites in suburban areas and middle-aged (aged 45–64 years) Whites in rural areas had the most marked increase in premature death relative to other subpopulation in each respective age group. Although we were unable to analyze the role of education and income, these findings supported observations of premature death in working class Whites by Case and Deaton.[9] During 2000 to 2014, poverty rates in suburban areas nearly tripled, with more people living in poverty in the areas surrounding large urban core areas than within them.[12,13] In addition, rural areas had high relative densities of working class Whites, many of whom experienced a loss of manufacturing jobs with subsequent permanent unemployment.[14,15] Once key contributors to US economic growth, rural communities are increasingly challenged by globalization and the loss of young skilled workers, fewer opportunities for gainful employment, and decreased production of marketable goods.[6] Adding to the economic burden are rural disparities in access to quality health care, higher levels of isolation, and striking differences in health behavior and attitudes, such as higher rates of smoking, sedentary activity, and stigmatization of mental illness.[16,17] Meanwhile, America's urban communities have undergone economic and population growth, and are the sites of revitalization and numerous public health initiatives targeting vulnerable populations, providing vital resources not available to many rural Americans.[18] Taken together, these economic, behavioral, and social factors leave rural Whites more susceptible to poor health outcomes.

If changing demographic and economic characteristics in suburban and rural areas play a role in increased premature mortality, then why are only Whites affected, whereas Blacks and Hispanic subpopulations in these areas enjoyed relative improvement? The answer is beyond the scope of this study; however, previous demographic observations offer potential explanations. First, segregation is still pervasive throughout the United States in urban, suburban, and rural areas.[19,20] Within these areas, many neighborhoods remain segregated so that the schools, health care facilities, churches, and other social support systems are not shared by various racial/ethnic groups. Second, these groups have unique perspectives on their history and their future prospects. Unlike Blacks and Hispanics in the same areas, working class Whites are faring worse than their parents economically, which intensifies feelings of despair.[9,21] As working class Whites lose their stronghold in the rural communities of the American Heartland, their hope may be diminishing along with their health.

In recent analyses that compared the longevity of the American working class with their counterparts in other high-income nations, only the American White working class has had an epidemic of premature death.[8,18,19] Although working classes in other nations have faced similar challenges from recent economic recession and trends in globalization, they have not experienced the rise in despair deaths. Case and Deaton[9] posited that the more generous safety net in these other nations preserved their middle class and provided more opportunities for these populations. Meanwhile, the American middle class has increasingly contracted since the 1970s, after enjoying decades of strength stimulated by the New Deal.[21] According to an analysis by Pew,[22] the middle class decreased by 7% during 2001 to 2015—the years included in our study—a decline caused by downward movement of households into a lower income bracket.[23]

Limitations

This study was limited by the lack of information about the educational and economic status of decedents and the effects of racial/ethnic misclassification. Economic and educational disparities played a role in the mortality advantage of urban Whites versus rural Whites.[24,25] Although we examined trends, death rates, and cause of death by age, race/ethnicity, and place, we could not stratify by individual income or education level. Because of differences in reporting of race between the US Census (where race is self-reported) and mortality data (where race is determined by a coroner or funeral home), inconsistencies might exist between racial/ethnic subpopulation count and death count that affected the mortality rate.[26] Particularly, data for Hispanics should be interpreted with caution because of possible bias of under-ascertainment.[27] Despite the likelihood of this bias, underestimation of Hispanic deaths at a given time point are unlikely to fully explain the trends. Previous research found that US Census reporting identified an additional 5% of Hispanics compared with death certifications, a discrepancy that did not significantly change over a 20-year reporting period.[28] Thus, the reduction in the death rate for Hispanics likely reflects an actual decrease in premature death over time, with only a small portion of the difference between Hispanics and Whites explained by reporting inconsistencies. Our focus on deaths in adults younger than 65 years, which have lower rates of *ICD-10* misclassification relative to deaths in older adults, strengthens the content validity of our analysis.[29–31] In addition, the novel description of the underlying causes driving trends in death rates for subpopulations by race/ethnicity and place contributes a new layer to existing premature mortality literature.

Conclusions

In summary, significant disparities exist in the trends of premature death rates in the United States by race/ethnicity and level of urbanization. These disparities in trends in death rates among Whites living outside of large urban communities are likely driven by underlying social and economic factors, such as a lack of economic opportunity in these communities relative to their counterparts in previous generations. To reverse unfavorable trends in death rates among Whites and to

continue improving trends for Hispanics and Blacks, culturally and geographically unique socioeconomic, behavioral, and environmental factors must be considered, in addition to access to high quality care.[21] If social programs are responsible for improving trends for working class individuals in other high-income nations, these programs should be broadened in the United States to strengthen the diminishing middle class and combat despair. Only then can reductions in premature death be enjoyed by populations of all races/ethnicities and in all places. AJPH

CONTRIBUTORS

All authors participated in collaborative meetings before the analysis and during the analysis to plan the study, discuss early findings, and determine how results should be displayed. E. M. Stein led the analysis, developed the method of choosing leading causes of deaths, and wrote the article. K. P. Gennuso assisted in the design of the figures and advised on the development and description of the methods. D. C. Ugboaja assisted in data queries, calculating mortality rates, and editing the article. P. L. Remington conceptualized the research aims, led collaborative meetings, and assisted in editing and revising the article.

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HUMAN PARTICIPANT PROTECTION

Institutional review board approval was not required because no human participants were included in this study.

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